

Class Starters & Enders

Making the Most of Instructional Time Five Minute Lessons

Class Starters and Enders help utilize the last minutes of class when a lesson ends but there is not enough time to start another, or for an interest approach at the beginning of class. Mini-lessons correlate to GPS in the programs areas below.

Muscle Types and Goose Bumps

Program Areas: Healthcare and Agriculture

Instructions: Read the material and make notes of important points, answer questions, if provided, and be ready to discuss this topic.

There are three types of muscles in the bodies of all animals — **skeletal muscle**, **smooth muscle**, and **cardiac muscle**. These muscles are either voluntary or involuntary.

Skeletal muscles are voluntary, meaning they are controlled by the brain. They are used in walking, lifting, and other functions. Skeletal muscles are anchored by tendons to bone. The average adult male is made up of 42% skeletal muscle, and the average adult female is 36% skeletal muscle.

Cardiac muscle is involuntary, meaning the brain cannot start and stop their functions at will. It has a structure similar to that of skeletal muscle. It is only found in the heart.

Smooth muscles are also involuntary. Smooth muscles are found within the walls of organs and structures such as the esophagus, stomach, intestines, bladder, blood vessels, and skin.

A type of smooth muscle in the skin, known as the arrector pili, is responsible for forming goose bumps. Goose bumps are an uncontrollable reflex started by the sympathetic nervous system. Goose bumps are temporary bumps on a person's skin which form because of an involuntary muscle response to a stimulus. The stimulus causes the heart rate to increase, pumping blood to muscles faster than usual. This causes the hair erector muscles around each hair follicle to contract and pull the hair up. This process of forming goose bumps is called piloerection.

The main stimulus for goose bumps is the body trying to retain heat. Some other stimuli include fear, feeling cold, or experiencing a strong emotion.

The term "goose bumps" comes from geese. When a goose is plucked, its skin has small bumps at the feather follicles, similar to the human phenomenon. Goose bumps can also be referred to as gooseflesh, goose pimples, or chicken skin.



Goose bumps are caused by the contraction of smooth muscles

Review Questions

1. What are the three types of muscles found in animals?
2. What controls a voluntary muscle?
3. How do goose bumps form?
4. What is the arrector pili?
5. What is the name for the process of forming goose bumps?
6. What is another name for goose bumps?
7. What are skeletal muscles used for?
8. What type of nervous system controls goose bumps?
9. Why are goose bumps named after geese?
10. What are some causes for goose bumps?

Science Connection

Research each of the three muscle types. On a piece of paper, draw a picture of the muscles' structure. In a short paragraph next to each picture, describe the muscle structure, how it is controlled, and where it can be found in the human body.